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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/330,593 06/11/99 POLONENKO

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EXAMINER	
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HM12/1029

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ART UNIT	PAPER NUMBER
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1661

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No. 09/330,593	Applicant(s) Daniel Polonenko et al.
Examiner Anne Marie Grunberg	Art Unit 1661

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on Aug 13, 2001

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle* 35 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-57 is/are pending in the application.
- 4a) Of the above, claim(s) 44 and 50-52 is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-43, 45-49, and 53-57 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13) Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

a) All b) Some* c) None of:

- Certified copies of the priority documents have been received.
- Certified copies of the priority documents have been received in Application No. _____.
- Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) Notice of References Cited (PTO-892) 18) Interview Summary (PTO-413) Paper No(s). _____
- 16) Notice of Draftsperson's Patent Drawing Review (PTO-948) 19) Notice of Informal Patent Application (PTO-152)
- 17) Information Disclosure Statement(s) (PTO-1449) Paper No(s). 4, 5 20) Other: _____

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DETAILED ACTION

1. Applicant's election with traverse of Group I in Paper No. 7 is acknowledged. The traversal is on the ground(s) that the other Groups are drawn to products made by the process of Group I. This is not found persuasive because product-by-process claims are not limited to the manipulations of the recited steps, only the structure implied by the steps (see MPEP 2113). As a result, the inventions are held to be separate and distinct from each other. Each particular Group does not make the others obvious. Searching each of the inventions is also a burden on the Examiner.

The requirement is still deemed proper and is therefore made FINAL.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

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Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

2. Claim 1 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 09/330,594. Although the conflicting claims are not identical, they are not patentably distinct from each other because steps (d)-(g) of claim 1 of '594 are the same as steps (a)-(d) of claim 1 of the instant application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

3. Claim 45 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 36 of copending Application No. 09/550,110. Although the conflicting claims are not identical, they are not patentably distinct from each other because the method of growing a somatic embryo into a seedling claimed in the present application utilizes the process for producing seedlings from somatic embryos as described in '110 on page 58 for example and subsequently claimed in claim 36.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

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Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1, 10, 13-14, 41-42, 48, 49, 53, and 56-57, and dependent claims 2-52, and 54-56, are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 10, and 57 are indefinite due to the phrase "having a period of somatic embryo germination", or for the reference to "said period" in step (d). It is confusing and redundant since germinating embryos would by definition have a period of somatic embryo germination.

Claims 13-14 are vague and indefinite in the recitation "where in". It appears that Applicant intended to state --wherein--, but this is not clear.

In claims 41-42, there is no proper antecedent basis for "the sugars".

In claim 48, there is no proper antecedent basis for "further nutrient solution".

In claim 49, there is no proper antecedent basis for "said embryos". It is also unclear how an embryo can become autotrophic.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-5, 10-11, 15-21, 24-28, 30, 45, and 53-57 are rejected under 35 U.S.C. 102(b) as being anticipated by Dupuis et al.

Dupuis et al teach a process for germinating somatic embryos wherein a somatic embryo is placed on a three-phase substrate in an environmentally-controlled plant-growing environment (page 2, lines 3, 23-29; page 3, lines 26-31) that can be manipulated to facilitate germination and wherein water or nutrient solutions are applied to the surface of the substrate in the form of microdroplets (page 4, lines 26-27). Gas exchange inherently occurs within a medium, thus allowing the embryo to respire. This argument is supported on page 2, lines 23-29 where it states that the method can be used in a liquid medium, by definition containing enough oxygen for respiration. The solid phase of the substrate may be made of extruded fibers such as cellulosic acetate, polyethylene fibers or polyurethane (page 2, lines 23-29). The plant-growing environment, as well as the three-phase substrate are non-sterile (page 1, lines 1-2, for example), and the somatic embryo is naked (page 8, example 4). The environmental factors temperature, humidity, and light are controlled (page 4, lines 26-27; page 5, lines 1-2). The temperature was maintained at 20°C (bottom of page 4). The somatic embryo was obtained from an angiosperm (middle of page 2) and was desiccated according to the method in C.R. Acad. Sci. Paris, Ser. III, 314, 423, 1992 to a final moisture content below 75% (page 8, lines 8-12). At page 2, line 17,

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gymnosperms were used. The three-phase substrate is a sterilized gel (page 8, line 22, and lines 24-26, for example) and as such contains a wetting agent. Several fungicides were added to control pathogens and could be applied in liquid form (page 3, lines 7-8 and 28-31). The substrate was contained within a horticultural container (page 3, line 31).

The somatic embryo was grown into a seedling at page 9, lines 4-6.

8. Claims 1-5, 10-11, 15, 18-21, 30-31, 35-36, 45, and 53-57 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujii et al.

Fujii et al teach a process for germinating somatic embryos wherein a somatic embryo is placed on a three-phase substrate in an environmentally-controlled plant-growing environment that can be manipulated to facilitate germination and wherein water or nutrient solutions are applied to the surface of the substrate in the form of microdroplets (page 1180, column 1, third full paragraph). Soil inherently contains oxygen, thus allowing the embryo to respire. The plant-growing environment, as well as the three-phase substrate are non-sterile (page 1180, column 2, first paragraph under Results and Discussion, for example), and the somatic embryo is naked (page 1181, column 2, line 23). The environmental factors such as temperature (page 1180, column 1, lines 1-2), humidity (page 1179, column 2, penultimate line), and light are controlled (page 1180, column 1, lines 1-2). The temperature was maintained at 24°C (page 1180, first column line 7). The somatic embryo was obtained from an angiosperm (abstract, for example). The three-phase substrate is a sterilized greenhouse soil potting mix and contains the wetting

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agents peat, vermiculite and perlite (page 1179, column 2, second paragraph under Materials and Methods). The substrate was contained within a horticultural container - a tray containing cells (page 1180, column 1, last paragraph). Seeding equipment, including a vacuum drum seeder, can be used to place the embryo on or within the substrate (page 1181, column 2, 2nd paragraph). The somatic embryo was grown into a seedling as described at page 1181, column 2, lines 26-30.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

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invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 1-57, are rejected under 35 U.S.C. 103(a) as obvious over Carlson et al in view of Fujii et al.

Carlson et al teach a process for germinating somatic embryos wherein a somatic embryo is placed in a three-phase substrate (column 3, lines 9-11, for example) in an environmentally-controlled plant-growing environment that can be manipulated to facilitate germination and wherein water or nutrient solutions are applied to the surface of the substrate (column 13, lines 58-64). The plant-growing environment is non-sterile (column 13, lines 58-64), and the somatic embryo may be naked within the substrate (Fig 7, for example). Germination temperature was 23°C (column 17, line 23). Gymnosperm somatic embryos were used (column 26, lines 66-67, for example). They also teach fungicides and insecticides (column 2, line 9, for example).

Carlson et al do not teach a non-sterile three-phase substrate wherein water or nutrient solutions are applied in the form of microdroplets. They also do not teach a specific substrate moisture level other than “hydrated”. They are also silent as to atmospheric humidity, and the interval and manner of nutrient and pesticide applications, as well as embryo desiccation. The type of horticultural containers used varied. Carlson et al also do not teach a material covering the three-phase substrate, or seeding equipment.

Fujii et al have been discussed *supra*.

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It would have been *prima facie* obvious to a person of ordinary skill in the art at the time the invention was made to utilize the method of germinating somatic embryos as taught by Carlson et al, and to modify that method by applying microdroplets of nutrients or water given the motivation expressed by Carlson et al in column 7, lines 59-67 to contact the gel with water containing nutrients. It would have been obvious to use microdroplets as expounded by Fujii et al to maintain high humidity using fine misting to maintain a constantly moist soil surface given that more nutrients flow through a hydrated gel and that a hydrated gel has less restraints for the germinating embryo. The exact humidity, gel moisture level, interval and manner of nutrient and pesticide applications, manner of embryo maturation or desiccation, manner of horticultural container used, manner of planting, and even genus would have been the optimization of process parameters.

12. Claims 1-57, are rejected under 35 U.S.C. 103(a) as obvious over each Dupuis et al and Fujii et al.

Dupuis et al and Fujii et al have been discussed previously.

Dupuis et al and Fujii et al do not teach a particular moisture level in the three-phase substrate, nor do they specify a particular atmospheric humidity between 75-100% or 85-95%. Neither teaches a particular timing, interval or manner of applying nutrients or water. Fujii et al does not teach a gymnosperm species, nor a desiccated somatic embryo. Fujii et al does not teach incorporating a fungicide into the substrate, and neither Dupuis et al nor Fujii et al teach

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incorporating an insecticide. Although Fujii et al teach a tray, Dupuis et al does not, and neither teaches a miniplug tray or a pot. Neither teaches covering the somatic embryo or substrate with a material such as peat. Dupuis et al does not teach placing the somatic embryo with seeding equipment, and neither teach a needle jet seeder or fluid drill seeder. Also, neither Dupuis et al nor Fujii et al teach delivery of micronutrients through the dispersal of micronutrients. Neither teaches a particular rate of growth for the embryos.

It would have been *prima facie* obvious to a person of ordinary skill in the art at the time the invention was made to utilize any of the above given that they are an optimization of process parameters and are all well-known in the art. For instance, Carlson et al teach several ways in which to provide nutrients (column 4, lines 8-20; column 7, lines 59-67), and compounds increasing embryo survival (column 8, lines 35-37).

No claim is allowed.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anne Marie Grunberg whose telephone number is (703) 305-0805. The examiner can normally be reached from Monday through Thursday from 7:30 until 5:00, and every other Friday from 7:30 until 4:00.

If attempts to reach the examiner are unsuccessful, the examiner's supervisor, Bruce Campell, can be reached at (703) 308-4205. The fax number for the unit is (703) 308-4242.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0196.

AMG



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